The objection to the drawings under MPEP § 608.02 is respectfully traversed.

Figures 1 and 2 illustrate a CT imaging system including detector array 18 (page 4 lines 18-25 of the specification). Also, Figures 3 and 4 illustrate that the detector array 18 includes a plurality of modules 50 which are illustrated in Figure 5 as including a clear, compliant film 86. Accordingly, Applicants respectfully submit that Figures 1-4 are not Prior Art. Rather, Figures 1-4 illustrate a CT imaging system including a detector array including a plurality of modules and configured in accordance with the specification and the Claims, and therefore, Figures 1-4 are not Prior Art. In other words, Applicant submits that although Figures 1 and 2 may not appear novel on their face, when Figures 1 and 2 are examined in light of the specification and the other figures, it is clear that the CT imaging system illustrated in Figures 1 and 2 is configured in a novel manner and, as such, should not be labeled Prior Art. Additionally, when Figures 3 and 4 are examined in light of the Claims and specification, and the other Figures, it is clear that the detector array illustrated in Figures 3 and 4 is configured in a novel manner and, as such, should not be labeled Prior Art. For at least the reasons above, Applicants respectfully request that the objection to the drawings under MPEP § 608.02 be withdrawn.

The objection to the abstract respectfully traversed. The abstract has been amended and is submitted to be in the proper language and format for an abstract. For the reason set forth above, Applicant respectfully requests that the objection to the abstract be withdrawn.

The rejection of Claims 1-4, 6, 15-24, 26, and 27 under 35 U.S.C. § 103(a) as being unpatentable over Hoffman et al. (U.S. Patent 6,144,718) in view of Schafer et al. (U.S. Patent 6,091,795) is respectfully traversed.

Hoffman et al. describe a flexible cable wherein wires from the flexible cable are wire bonded to photodiode output signals. Abstract. Notably, Hoffman et al. are silent with respect to thermal coefficients of expansion.

Schafer et al. describe "In a preferred embodiment, at least one three-dimensional grid and at least one planar grid are employed in the assembly. The three-dimensional alignment grid 28 is preferably made of an optically opaque material which has a relatively low coefficient of thermal expansion, so as to lend structural support and stability to the detector array during operation of the scanner. Suitable materials for the three-dimensional alignment grid include, for example, glass, fiberglass, plastic and opaque ceramic." Col. 6, line 61 to col. 7, line 2. Schafer et al. further describe that "The substrate 12 can be made of any structural material which is suitable for supporting the photodiode and scintillator crystal array, as well as the electrical interconnect layer and signal transmission means. Suitable materials for the substrate include, for example, plastic, glass, fiberglass and ceramics." Col. 7, lines 52-57. Accordingly, Applicant respectfully traverses the assertion in the Office Action that "'relatively' in the comparison made by Schafer et al. is with respect to the substrate 12." Rather, Applicant submits that because Schafer et al. describe that the same materials (glass, fiberglass, plastic, and ceramic) are suitable for both the three-dimensional alignment grid and the substrate, Schafer et al. are not making a comparison between the thermal coefficients of expansion of the three-dimensional alignment grid and the substrate. Schafer et al. further describe that a plurality of "scintillator crystals 22 are surrounded on up to all sides, other than the side closest to a corresponding photodiode 14, by an optically reflective material 30, such as, for example, an epoxy filled with titanium dioxide" (col. 7, lines 32-37) and that "the region between a scintillator crystal and a corresponding photodiode is preferably filled with an optically transmissive medium, such as air, silicone, transparent polymers, or glass. The regions between and above adjacent scintillator crystals are filled with an optically reflective medium, such as titanium-containing epoxy or a reflective paint or foil". Col. 8, lines 28-35. Notably, Schafer et al. are silent with respect to titanium oxide and a clamping mechanism including a silica glass containing titanium oxide.

Applicant respectfully submits that the Section 103 rejection of the presently pending claim is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to modify Hoffman et al. according to the teachings of Schafer et al. More specifically, as is well established, obviousness cannot be

established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Neither Hoffman et al. nor Schafer et al., alone or in combination, describe or suggest the claimed combination. Rather, the present Section 103 rejection appears to be based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically Hoffman et al. is cited for its teaching of a flexible cable wherein wires from the flexible cable are wire bonded to photodiode output signals, and Schafer et al. is cited for its teaching that the same materials are suitable for both a three-dimensional alignment grid and a substrate. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant respectfully requests that the Section 103 rejection of Claims 1-4, 6, 15-24, 26, and 27 be withdrawn.

Further, and to the extent understood, neither Hoffman et al. nor Schafer et al., alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination.

Claims 1-3, 17, 20-21, 23, and 27 have been canceled. Claim 4 recites a finished detector module assembly suitable for use in a computed tomography (CT) imaging system, wherein the detector module includes "a substrate; a photosensor array mounted on the substrate; an array of scintillators optically coupled to said photosensor array and separated therefrom by a gap, said gap filled with a member of the group consisting of air and a compliant clear film; a clamping mechanism clamping said array of scintillators in place above and aligned with said photosensor array, wherein said clamping mechanism has a thermal coefficient of expansion less than that of said substrate; and a flexible electrical cable electrically coupled to the photosensor array".

Neither Hoffman et al. nor Schafer et al., alone or in combination, describe or suggest a finished detector module assembly including a substrate, a photosensor array mounted on the

substrate, an array of scintillators optically coupled to the photosensor array and separated therefrom by a gap, the gap filled with a member of the group consisting of air and a compliant clear film, a clamping mechanism clamping the array of scintillators in place above and aligned with the photosensor array, wherein the clamping mechanism has a thermal coefficient of expansion less than that of the substrate, and a flexible electrical cable electrically coupled to the photosensor array. Moreover, neither Hoffman et al. nor Schafer et al., alone or in combination, describe or suggest a finished detector module assembly wherein a clamping mechanism has a thermal coefficient of expansion less than that of a substrate. Rather, Hoffman et al. are silent regarding thermal coefficients of expansion, and Schafer et al. describe that the thermal expansion of an alignment grid is relatively low and suitable materials for the grid include glass, fiberglass, plastic, and ceramic, which are the same suitable materials for the substrate of Schafer et al. For at least the reasons above, Claim 4 is submitted to be patentable over Hoffman et al. in view of Schafer et al.

Claims 6, 15-16, and 18-19 depend, directly or indirectly, from independent Claim 4. When the recitations of Claims 6, 15-16, and 18-19 are considered in combination with the recitations of Claim 4, Applicant submits that dependent Claims 6, 15-16, and 18-19 likewise are patentable over Hoffman et al. in view of Schafer et al.

Claim 24 recites a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes "adhesively bonding a photosensor array to a substrate; electrically bonding a flexible cable to the photosensor array; preforming a compliant, clear film into a size and shape configured for placement between and optical coupling of the photosensor array to an array of scintillators; placing the preformed film on top of the photosensor array; placing a scintillator array on top of the preformed film; adhesively bonding a clamping mechanism to the scintillator array to form a scintillator/clamping mechanism assembly, wherein said step of placing the scintillator array on top of the preformed film comprises the step of adhesively bonding the clamping mechanism of

the scintillator/clamping mechanism assembly to the substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate".

Neither Hoffman et al. nor Schafer et al., alone or in combination, describe or suggest a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes adhesively bonding a photosensor array to a substrate, electrically bonding a flexible cable to the photosensor array, preforming a compliant, clear film into a size and shape configured for placement between and optical coupling of the photosensor array to an array of scintillators, placing the preformed film on top of the photosensor array, placing a scintillator array on top of the preformed film, adhesively bonding a clamping mechanism to the scintillator array to form a scintillator/clamping mechanism assembly, wherein the step of placing the scintillator array on top of the preformed film includes adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate. Moreover, neither Hoffman et al. nor Schafer et al., alone or in combination, describe or suggest a method including adhesively bonding a clamping mechanism of a scintillator/clamping mechanism assembly to a substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate. Rather, Hoffman et al. are silent regarding thermal coefficients of expansion, and Schafer et al. describe that the thermal expansion of an alignment grid is relatively low and suitable materials for the grid include glass, fiberglass, plastic, and ceramic, which are the same suitable materials for the substrate of Schafer et al. For at least the reasons above, Claim 24 is submitted to be patentable over Hoffman et al. in view of Schafer et al.

Claim 22 depends directly from independent Claim 24. When the recitations of Claim 22 are considered in combination with the recitations of Claim 24, Applicant submits that dependent Claim 22 likewise is patentable over Hoffman et al. in view of Schafer et al.

Claim 26 recites a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes "adhesively bonding a photosensor array to a substrate; electrically bonding a flexible cable to the photosensor array; adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate; and adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap".

Neither Hoffman et al. nor Schafer et al., alone or in combination, describe or suggest a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes adhesively bonding a photosensor array to a substrate, electrically bonding a flexible cable to the photosensor array, adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate, and adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap. Moreover, neither Hoffman et al. nor Schafer et al., alone or in combination, describe or suggest a method including adhesively bonding a clamping mechanism of a scintillator/clamping mechanism assembly to a substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate. Rather, Hoffman et al. are silent regarding thermal coefficients of expansion, and Schafer et al. describe that the thermal expansion of an alignment grid is relatively low and suitable materials for the grid include glass, fiberglass, plastic, and ceramic, which are the same suitable materials for the substrate of Schafer et al. For at least the reasons above, Claim 26 is submitted to be patentable over Hoffman et al. in view of Schafer et al.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 1-4, 6, 15-24, 26, and 27 be withdrawn.

The rejection of Claims 5, 25, and 28 under 35 U.S.C. § 103(a) as being unpatentable over Hoffman et al. and Schafer et al. in view of Wieczorek et al. (U.S. Patent 6,252,927) is respectfully traversed.

Hoffman et al. and Schafer et al. are described above. Wieczorek et al. describe a scintillator layer including yttrium gadolinium oxide (YGO).

Applicant respectfully submits that the Section 103 rejection of the presently pending claim is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to modify Hoffman et al. according to the teachings of Schafer et al. and Wieczorek et al. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Hoffman et al., Schafer et al., and Wieczorek et al., alone or in combination, describe or suggest the claimed combination. Rather, the present Section 103 rejection appears to be based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically Hoffman et al. is cited for its teaching of a flexible cable wherein wires from the flexible cable are wire bonded to photodiode output signals, Schafer et al. is cited for its teaching that the same materials are suitable for both a three-dimensional alignment grid and a substrate, and Wieczorek et al. is cited for its teaching of a scintillator layer including YGO. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant respectfully requests that the Section 103 rejection of Claims 5, 25, and 28 be withdrawn.

Further, and to the extent understood, none of Hoffman et al., Schafer et al., and Wieczorek et al., alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination.

Claim 5 recites a finished detector module assembly suitable for use in a computed tomography (CT) imaging system, wherein the detector module includes "a substrate; a photosensor array mounted on the substrate; an array of scintillators optically coupled to said photosensor array and separated therefrom by a gap, said gap filled with a member of the group consisting of air and a compliant clear film; a clamping mechanism clamping said array of scintillators in place above and aligned with said photosensor array, wherein said clamping mechanism comprises a silica glass containing titanium oxide, said array of scintillators comprises yttrium gadolinium oxide and an epoxy reflector material, and said substrate comprises a ceramic; and a flexible electrical cable electrically coupled to the photosensor array".

None of Hoffman et al., Schafer et al., and Wieczorek et al., alone or in combination, describe or suggest a finished detector module assembly including a substrate, a photosensor array mounted on the substrate, an array of scintillators optically coupled to the photosensor array and separated therefrom by a gap, the gap filled with a member of the group consisting of air and a compliant clear film, a clamping mechanism clamping the array of scintillators in place above and aligned with the photosensor array, wherein the clamping mechanism comprises a silica glass containing titanium oxide, the array of scintillators comprises yttrium gadolinium oxide and an epoxy reflector material, and the substrate comprises a ceramic, and a flexible electrical cable electrically coupled to the photosensor array.. Moreover, none of Hoffman et al., Schafer et al., and Wieczorek et al., alone or in combination, describe or suggest a finished detector module assembly wherein a clamping mechanism clamping an array of scintillators in place above and aligned with a photosensor array, wherein the clamping mechanism comprises a silica glass containing titanium oxide. Rather, Hoffman et al. are silent regarding titanium, Schafer et al. describe an epoxy filled with titanium dioxide, and Wieczorek et al. describe a

scintillator layer including YGO. For at least the reasons above, Claim 5 is submitted to be patentable over Hoffman et al. in view of Schafer et al. and further in view of Wieczorek et al.

Claim 25 depends from Claim 24 which recites a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes "adhesively bonding a photosensor array to a substrate; electrically bonding a flexible cable to the photosensor array; preforming a compliant, clear film into a size and shape configured for placement between and optical coupling of the photosensor array to an array of scintillators; placing the preformed film on top of the photosensor array; placing a scintillator array on top of the preformed film; adhesively bonding a clamping mechanism to the scintillator array to form a scintillator/clamping mechanism assembly, wherein said step of placing the scintillator array on top of the preformed film comprises the step of adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate".

None of Hoffman et al., Schafer et al., and Wieczorek et al., alone or in combination, describe or suggest a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes adhesively bonding a photosensor array to a substrate, electrically bonding a flexible cable to the photosensor array, preforming a compliant, clear film into a size and shape configured for placement between and optical coupling of the photosensor array to an array of scintillators, placing the preformed film on top of the photosensor array, placing a scintillator array on top of the preformed film, adhesively bonding a clamping mechanism to the scintillator array to form a scintillator/clamping mechanism assembly, wherein the step of placing the scintillator array on top of the preformed film includes adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate. Moreover, none of Hoffman et al.,

Schafer et al., and Wieczorek et al., alone or in combination, describe or suggest a method including adhesively bonding a clamping mechanism of a scintillator/clamping mechanism assembly to a substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate. Rather, Hoffman et al. are silent regarding thermal coefficients of expansion, Schafer et al. describe that the thermal expansion of an alignment grid is relatively low and suitable materials for the grid include glass, fiberglass, plastic, and ceramic, which are the same suitable materials Schafer et al. describe for its substrate, and Wieczorek et al. describe a scintillator layer including YGO. For at least the reasons above, Claim 24 is submitted to be patentable over Hoffman et al. in view of Schafer et al. and further in view of Wieczorek et al.

Claim 25 depends directly from independent Claim 24. When the recitations of Claim 25 are considered in combination with the recitations of Claim 24, Applicant submits that dependent Claim 25 likewise is patentable over Hoffman et al. in view of Schafer et al. and further in view of Wieczorek et al.

Claim 28 depends from Claim 26 which recites a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes "adhesively bonding a photosensor array to a substrate; electrically bonding a flexible cable to the photosensor array; adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate; and adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap".

None of Hoffman et al., Schafer et al., and Wieczorek et al., alone or in combination, describe or suggest a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array

optically coupled to an array of scintillators, wherein the method includes adhesively bonding a photosensor array to a substrate, electrically bonding a flexible cable to the photosensor array, adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate, and adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap. Moreover, none of Hoffman et al., Schafer et al., and Wieczorek et al., alone or in combination, describe or suggest a method including adhesively bonding a clamping mechanism of a scintillator/clamping mechanism assembly to a substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate. Rather, Hoffman et al. are silent regarding thermal coefficients of expansion, Schafer et al. describe that the thermal expansion of an alignment grid is relatively low and suitable materials for the grid include glass, fiberglass, plastic, and ceramic, which are the same suitable materials Schafer et al. describe for its substrate, and Wieczorek et al. describe a scintillator layer including YGO. For at least the reasons above, Claim 26 is submitted to be patentable over Hoffman et al. in view of Schafer et al. and further in view of Wieczorek et al.

Claim 28 depends directly from independent Claim 26. When the recitations of Claim 28 are considered in combination with the recitations of Claim 26, Applicant submits that dependent Claim 28 likewise is patentable over Hoffman et al. in view of Schafer et al. and further in view of Wieczorek et al.

For the reason set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 5, 25, and 28 be withdrawn.

The rejection of Claims 7-10 and 29 under 35 U.S.C. § 103(a) as being unpatentable over Hoffman et al. and Schafer et al. and further in view of Iwanczyk et al. (U.S. Patent 5,773,829) is respectfully traversed.

Hoffman et al. and Schafer et al. are described above. Iwanczyk et al. describe a plurality of scintillator segments wherein "Each of the segments has optimally prepared surfaces. The top 56 is roughened and the sides 58 are highly polished." Col. 8, lines 39-41. Iwanczyk et al. also describe that of a photodiode array (24) is covered with an anti-reflective coating. Col. 9, lines 26-28. Notably, Iwanczyk et al. is silent with respect to coatings for scintillators.

Applicant respectfully submits that the Section 103 rejection of the presently pending claim is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to modify Hoffman et al. according to the teachings of Schafer et al. and Iwanczyk et al. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Hoffman et al., Schafer et al., and Iwanczyk et al., alone or in combination, describe or suggest the claimed combination. Rather, the present Section 103 rejection appears to be based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically Hoffman et al. is cited for its teaching of a flexible cable wherein wires from the flexible cable are wire bonded to photodiode output signals, Schafer et al. is cited for its teaching that the same materials are suitable for both a three-dimensional alignment grid and a substrate, and Iwanczyk et al. is cited for its teaching of a photodiode array covered with an anti-reflective coating. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant respectfully requests that the Section 103 rejection of Claims 7-10 and 29 be withdrawn.

Further, and to the extent understood, none of Hoffman et al., Schafer et al., and Iwanczyk et al., alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination.

Claim 7 recites a finished detector module assembly suitable for use in a computed tomography (CT) imaging system, wherein the detector module includes "a substrate; a photosensor array mounted on the substrate; an array of scintillators optically coupled to said photosensor array and separated therefrom by a gap, said gap filled with a member of the group consisting of air and a compliant clear film; a clamping mechanism clamping said array of scintillators in place above and aligned with said photosensor array, wherein said photosensor array and said array of scintillators have facing surfaces, and wherein at least one of said facing surfaces is coated with an antireflection film, wherein said surface of said array of scintillators is coated with said antireflection film; and a flexible electrical cable electrically coupled to the photosensor array".

None of Hoffman et al., Schafer et al., and Iwanczyk et al., alone or in combination, describe or suggest a detector module that includes a substrate, a photosensor array mounted on the substrate, an array of scintillators optically coupled to the photosensor array and separated therefrom by a gap, the gap filled with a member of the group consisting of air and a compliant clear film, a clamping mechanism clamping the array of scintillators in place above and aligned with the photosensor array, wherein the photosensor array and the array of scintillators have facing surfaces, and wherein at least one of the facing surfaces is coated with an antireflection film, wherein the surface of the array of scintillators is coated with the antireflection film, and a flexible electrical cable electrically coupled to the photosensor array. Moreover, none of Hoffman et al., Schafer et al., and Iwanczyk et al., alone or in combination, describe or suggest a detector module that includes a photosensor array and a array of scintillators have facing surfaces, and wherein at least one of the facing surfaces is coated with an antireflection film, wherein the surface of the array of scintillators is coated with the antireflection film. Rather, Hoffman et al. and Schafer et al. are silent with respect to anti-reflective coatings, and Iwanczyk et al. describe a photodiode array covered with an anti-reflective coating. For at least the reasons above, Claim 7 is submitted to be patentable over Hoffman et al. in view of Schafer et al. and further in view of Iwanczyk et al.

Claim 8 depends directly from independent Claim 7. When the recitations of Claim 8 are considered in combination with the recitations of Claim 7, Applicant submits that dependent Claim 8 likewise is patentable over Hoffman et al. in view of Schafer et al. and further in view of Iwanczyk et al. Claims 9-10 have been canceled.

Claim 29 depends from Claim 26 which recites a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes "adhesively bonding a photosensor array to a substrate; electrically bonding a flexible cable to the photosensor array; adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate; and adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap".

None of Hoffman et al., Schafer et al., and Iwanczyk et al., alone or in combination, describe or suggest a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes adhesively bonding a photosensor array to a substrate, electrically bonding a flexible cable to the photosensor array, adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate, and adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap. Moreover, none of Hoffman et al., Schafer et al., and Iwanczyk et al., alone or in combination, describe or suggest a method including adhesively bonding a clamping mechanism of a scintillator/clamping mechanism assembly to a substrate, wherein the clamping mechanism has a thermal coefficient of expansion

less than the substrate. Rather, Hoffman et al. are silent regarding thermal coefficients of expansion. Schafer et al. describe that the thermal expansion of an alignment grid is relatively low and suitable materials for the grid include glass, fiberglass, plastic, and ceramic, which are the same suitable materials Schafer et al. describe for its substrate, and Iwanczyk et al. describe a photodiode array covered with an anti-reflective coating. For at least the reasons above, Claim 26 is submitted to be patentable over Hoffman et al. in view of Schafer et al. and further in view of Iwanczyk et al.

Claim 29 depends directly from independent Claim 26. When the recitations of Claim 29 are considered in combination with the recitations of Claim 26, Applicant submits that dependent Claim 29 likewise is patentable over Hoffman et al. in view of Schafer et al. and further in view of Iwanczyk et al.

For the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 7-10 and 29 be withdrawn.

The rejection of Claims 11-14 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Hoffman et al., Schafer et al., and Iwanczyk et al., and further in view of Yamashita et al. (U.S. Patent 4,823,016) is respectfully traversed.

Hoffman et al., Schafer et al., and Iwanczyk et al. are described above. Yamashita et al. describe scintillator elements wherein end surfaces of the elements are mirror polished. Col. 4, lines 19-20.

Applicant respectfully submits that the Section 103 rejection of the presently pending claim is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to modify Hoffman et al. according to the teachings of Schafer et al., Iwanczyk et al., and Yamashita et al. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the

combination. None of Hoffman et al., Schafer et al., Iwanczyk et al., and Yamashita et al., alone or in combination, describe or suggest the claimed combination. Rather, the present Section 103 rejection appears to be based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically Hoffman et al. is cited for its teaching of a flexible cable wherein wires from the flexible cable are wire bonded to photodiode output signals, Schafer et al. is cited for its teaching that the same materials are suitable for both a three-dimensional alignment grid and a substrate, Iwanczyk et al. is cited for its teaching of a photodiode array covered with an anti-reflective coating, and Yamashita et al. is cited for its teaching of scintillator elements wherein end surfaces of the elements are mirror polished.. Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant respectfully requests that the Section 103 rejection of Claims 11-14 and 30 be withdrawn.

Further, and to the extent understood, none of Hoffman et al., Schafer et al., Iwanczyk et al., and Yamashita et al., alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination.

Claims 11-14 depend from Claim 7 which recites a finished detector module assembly suitable for use in a computed tomography (CT) imaging system, wherein the detector module includes "a substrate; a photosensor array mounted on the substrate; an array of scintillators optically coupled to said photosensor array and separated therefrom by a gap, said gap filled with a member of the group consisting of air and a compliant clear film; a clamping mechanism clamping said array of scintillators in place above and aligned with said photosensor array, wherein said photosensor array and said array of scintillators have facing surfaces, and wherein at least one of said facing surfaces is coated with an antireflection film, wherein said surface of

said array of scintillators is coated with said antireflection film; and a flexible electrical cable electrically coupled to the photosensor array".

None of Hoffman et al., Schafer et al., Iwanczyk et al., and Yamashita et al., alone or in combination, describe or suggest a detector module that includes a substrate, a photosensor array mounted on the substrate, an array of scintillators optically coupled to the photosensor array and separated therefrom by a gap, the gap filled with a member of the group consisting of air and a compliant clear film, a clamping mechanism clamping the array of scintillators in place above and aligned with the photosensor array, wherein the photosensor array and the array of scintillators have facing surfaces, and wherein at least one of the facing surfaces is coated with an antireflection film, wherein the surface of the array of scintillators is coated with the antireflection film, and a flexible electrical cable electrically coupled to the photosensor array. Moreover, none of Hoffman et al., Schafer et al., Iwanczyk et al., and Yamashita et al., alone or in combination, describe or suggest a detector module that includes a photosensor array and a array of scintillators have facing surfaces, and wherein at least one of the facing surfaces is coated with an antireflection film, wherein the surface of the array of scintillators is coated with the antireflection film. Rather, Hoffman et al. and Schafer et al. are silent with respect to anti-reflective coatings, Iwanczyk et al. describe a photodiode array covered with an anti-reflective coating, and Yamashita et al. describe scintillator elements wherein end surfaces of the elements are mirror polished. For at least the reasons above, Claim 7 is submitted to be patentable over Hoffman et al., Schafer et al., and Iwanczyk et al., and further in view of Yamashita et al.

Claims 11-14 depend directly from independent Claim 7. When the recitations of Claims 11-14 are considered in combination with the recitations of Claim 7, Applicant submits that dependent Claims 11-14 likewise are patentable over Hoffman et al., Schafer et al., and Iwanczyk et al., and further in view of Yamashita et al.

Claim 30 depends from Claim 26 which recites a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector

module including a photosensor array optically coupled to an array of scintillators, wherein the method includes "adhesively bonding a photosensor array to a substrate; electrically bonding a flexible cable to the photosensor array; adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate; and adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap".

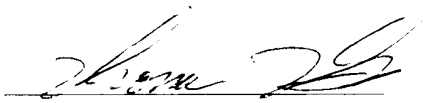
None of Hoffman et al., Schafer et al., Iwanczyk et al., and Yamashita et al., alone or in combination, describe or suggest a method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, wherein the method includes adhesively bonding a photosensor array to a substrate, electrically bonding a flexible cable to the photosensor array, adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate, and adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap. Moreover, none of Hoffman et al., Schafer et al., Iwanczyk et al., and Yamashita et al., alone or in combination, describe or suggest a method including adhesively bonding a clamping mechanism of a scintillator/clamping mechanism assembly to a substrate, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate. Rather, Hoffman et al. and Schafer et al. are silent with respect to anti-reflective coatings, Iwanczyk et al. describe a photodiode array covered with an anti-reflective coating, and Yamashita et al. describe scintillator elements wherein end surfaces of the elements are mirror polished. For at least the reasons above, Claim 26 is submitted to be patentable over Hoffman et al., Schafer et al., and Iwanczyk et al., and further in view of Yamashita et al.

Claim 30 depends directly from independent Claim 26. When the recitations of Claim 30 are considered in combination with the recitations of Claim 26, Applicant submits that dependent Claim 30 likewise is patentable over Hoffman et al., Schafer et al., and Iwanczyk et al., and further in view of Yamashita et al.

For the reason set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 11-14 and 30 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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15-CT-5233
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: David M. Hoffman

Serial No.: 09/735,131

Filed: December 12, 2000

For: SOLID-STATE CT DETECTOR MODULES WITH IMPROVED SCINTILLATOR/DIODE COUPLING

Art Unit: 2878

Examiner: Constantine Hannaher

SUBMISSION OF MARKED UP CLAIMS

Hon. Commissioner for Patents
Washington, D.C. 20231

Sir:

Submitted herewith are marked up Claims in accordance with 37 C.F.R. 1.121(c)(1)(ii), wherein additions are underlined and deletions are [bracketed].

IN THE CLAIMS

4. (once amended) A finished detector module assembly suitable for use in a computed tomography (CT) imaging system, said detector module comprising:

a substrate;

a photosensor array mounted on the substrate;

an array of scintillators optically coupled to said photosensor array and separated therefrom by a gap, said gap filled with a member of the group consisting of air and a compliant clear film;

a clamping mechanism clamping said array of scintillators in place above and aligned with said photosensor array, [A finished detector module in accordance with Claim 3] wherein said clamping mechanism has a thermal coefficient of expansion less than that of said substrate[.]; and

a flexible electrical cable electrically coupled to the photosensor array.

5. (once amended) A finished detector module assembly suitable for use in a computed tomography (CT) imaging system, said detector module comprising:

a substrate;

a photosensor array mounted on the substrate;

an array of scintillators optically coupled to said photosensor array and separated therefrom by a gap, said gap filled with a member of the group consisting of air and a compliant clear film;

a clamping mechanism clamping said array of scintillators in place above and aligned with said photosensor array,[A finished detector module in accordance with Claim 3] wherein said clamping mechanism comprises a silica glass containing titanium oxide, said array of scintillators comprises yttrium gadolinium oxide and an epoxy reflector material, and said substrate comprises a ceramic[.]; and

a flexible electrical cable electrically coupled to the photosensor array.

6. (once amended) A finished detector module in accordance with Claim [2]4 wherein said gap is filled with air.

7. (once amended) A finished detector module assembly suitable for use in a computed tomography (CT) imaging system, said detector module comprising:

a substrate;

a photosensor array mounted on the substrate;

an array of scintillators optically coupled to said photosensor array and separated therefrom by a gap, said gap filled with a member of the group consisting of air and a compliant clear film;

a clamping mechanism clamping said array of scintillators in place above and aligned with said photosensor array, [A finished detector module in accordance with Claim 6] wherein said photosensor array and said array of scintillators have facing surfaces, and wherein at least one of said facing surfaces is coated with an antireflection film[.], wherein said surface of said array of scintillators is coated with said antireflection film; and

a flexible electrical cable electrically coupled to the photosensor array.

15. (once amended) A finished detector module in accordance with Claim [2]4 wherein said gap is filled with a compliant, clear film.

16. (once amended) A finished detector module in accordance with Claim [2]15 wherein said compliant, clear film is an adhesive film.

18. (once amended) A finished detector module in accordance with Claim [17]15 wherein said compliant, clear film is a material selected from the group consisting of silicone, polyester, and acrylic materials.

19. (once amended) A finished detector module in accordance with Claim [17]15 wherein said compliant, clear film is selected from the group consisting of silicate and organic gels.

22. (once amended) A method in accordance with Claim [21]24 wherein the preformed, compliant, clear film is an epoxy-based adhesive film.

24. (once amended) A method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, said method comprising the steps of:

adhesively bonding a photosensor array to a substrate;

electrically bonding a flexible cable to the photosensor array;

preforming a compliant, clear film into a size and shape configured for placement between and optical coupling of the photosensor array to an array of scintillators;

placing the preformed film on top of the photosensor array;

placing a scintillator array on top of the preformed film;

adhesively bonding a clamping mechanism to the scintillator array to form a scintillator/clamping mechanism assembly, wherein said step of placing the scintillator array on top of the preformed film comprises the step of adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate,[A method in accordance with Claim 23] wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate.

26. (once amended) A method for making a finished detector module suitable for use in computed tomography (CT) imaging systems, the finished detector module including a photosensor array optically coupled to an array of scintillators, said method comprising the steps of:

adhesively bonding a photosensor array to a substrate;

electrically bonding a flexible cable to the photosensor array;

adhesively bonding a clamping mechanism to a scintillator array to form a scintillator/clamping mechanism assembly, wherein the clamping mechanism has a thermal coefficient of expansion less than the substrate; and

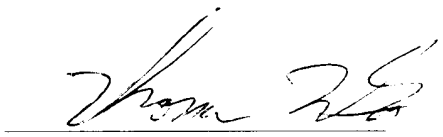
adhesively bonding the clamping mechanism of the scintillator/clamping mechanism assembly to the substrate so that a surface of the scintillator opposes a surface of the photosensor array across an air gap.

IN THE ABSTRACT

Please delete the Abstract and replace therefor with the following replacement Abstract:

A finished detector module suitable for use in a computed tomography (CT) imaging system is provided. The finished detector module includes a substrate; a photosensor array mounted on the substrate; an array of scintillators optically coupled to the photosensor array and separated therefrom by a gap filled with either air or a compliant clear film, and a flexible electrical cable electrically coupled to the photosensor array.

Respectfully Submitted,



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